

## **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.



RESERVE

1  
Ag 84 F

7501

S

Farmers' Bulletin No. 2183 • U.S. DEPARTMENT OF AGRICULTURE

Revised

# USING PHENOXY HERBICIDES EFFECTIVELY

U. S. DEPT. OF AGRICULTURE  
NATIONAL AGRICULTURAL LIBRARY

JUN 15 1971

LIBRARY SERIAL RECORDS





## COMMON AND CHEMICAL NAMES OF PHENOXY HERBICIDES

<i>Common name</i>	<i>Chemical name</i>
2,4-D .....	2,4-dichlorophenoxyacetic acid
2,4,5-T .....	2,4,5-trichlorophenoxyacetic acid
Silvex .....	2-(2,4,5-trichlorophenoxy)propionic acid
MCPA .....	2-methyl-4-chlorophenoxyacetic acid
2,4-DB .....	4-(2,4-dichlorophenoxy)butyric acid

The U.S. Department of Agriculture has suspended the use of liquid formulations of 2,4,5-T around the home and of all formulations on lakes, ponds, and ditchbanks. Also, the Department has cancelled use of all formulations of 2,4,5-T on food crops and of dry formulations around the home. 2,4,5-T should not be used in any of the above situations, and inclusion of 2,4,5-T in this publication does not suggest such uses.

## CONTENTS

	Page
How plants react .....	3
Salts and esters .....	3
"Acid equivalent" .....	5
Application .....	5
General principles .....	5
Methods .....	6
Testing output of sprayer .....	8
Cleaning spray equipment .....	10
Susceptibility chart .....	11



*Use Pesticides Safely*  
FOLLOW THE LABEL

U.S. DEPARTMENT OF AGRICULTURE

*This bulletin supersedes Farmers' Bulletin 2005, "Using 2,4-D Safely."*

Washington, D.C.

Issued May 1962  
Revised January 1971

For sale by the Superintendent of Documents, U.S. Government Printing Office  
Washington, D.C. 20402 - Price 20 cents

# USING PHENOXY HERBICIDES EFFECTIVELY

2,4-D, 2,4,5-T, MCPA, Silvex, 2,4-DB

ER 205 Jan. 1971

By D. L. Klingman and W. C. Shaw, Crops Research Division,  
Agricultural Research Service

Phenoxy herbicides—chiefly 2,4-D, 2,4,5-T,<sup>1</sup> silvex, MCPA, and 2,4-DB—are used widely. They are used for controlling weeds in many crops, on grazing lands, on lawns, and for killing unwanted brush and trees. These herbicides are especially useful because—

- They are selective; they kill most broadleaf plants but do not kill grasses or grain crops.
- They are potent; many species of weeds are controlled by less than 1 pound of active ingredient per acre.
- They are easy to use.
- They are not poisonous to man, domestic animals, or game when applied at the recommended rates.
- They do not accumulate in the soil and they have no harmful effects on soil organisms.
- They are not corrosive to spraying equipment.

## HOW PLANTS REACT

When sprayed with phenoxy herbicides, leaves, green stems, twigs, flowers, and fruits usually absorb the herbicides. Roots absorb herbicides sprayed on the soil.

<sup>1</sup> See limitation on use of 2,4,5-T on page 2.

When they are applied to growing plants or to the soil, herbicides rapidly become distributed in the leaves, stems, and roots and cause susceptible plants to die.

These herbicides are absorbed most readily by plants that are growing rapidly. Annual weeds are easiest to kill when they are young. Perennial weeds are easy to kill while they are seedlings; after they are established, most perennials are easiest to kill at the time flower buds appear.

Some broadleaf weeds are killed by very small amounts of phenoxy herbicides. Some are almost unaffected by very large amounts.

The chart on pages 12 to 24 lists the susceptibility of many common weeds and woody plants to control by 2,4-D, 2,4,5-T,<sup>1</sup> MCPA, silvex, and 2,4-DB.

## SALTS AND ESTERS

Phenoxy herbicides are usually formulated as acids, salts, and esters. Salt and ester formulations usually are supplied as liquid concentrates. The purchaser mixes them before use. The salt concentrates form solutions when mixed with water. The ester concentrates form solutions when mixed with oil; they form milky-white



emulsions when mixed with water.

Heat causes ester formulations to release vapors. At temperatures below 90° F., low-volatile esters are much less volatile than high-volatile esters, and are less likely to damage susceptible crops. Vapors from either low- or high-volatile esters are about equally phytotoxic at temperatures above 90° F.

*Vapors from ester formulations can kill susceptible plants growing near the area to which the formulations are applied.* Low-volatile esters are safer—that is, less likely to harm susceptible crops by toxic vapors—than high-volatile esters. Salt formulations are safest—they do not release enough vapors to cause damage.

High-volatile esters are less expensive than low-volatile esters and

they can be used effectively and safely if no susceptible crops are growing nearby.

Ester formulations of the phenoxy herbicides are generally more potent, pound for pound, than salts. They penetrate leaves and other plant surfaces more readily than salts. When a range of rates is recommended for herbicide application, use the lower rate for esters and the higher rate for salts.

Esters are more effective than salts for killing weeds that are growing slowly because of drought or cold weather. Esters usually are best for treating weeds in areas of low humidity; esters are formulated in oils and remain in moist contact on foliage longer and penetrate better than salts, which are mixed with water. And, because



BN-13721-X

Weeds in this field of small grain (treated part at right) were controlled with 2,4-D. The herbicide costs about 25 cents per acre.

they are oily, esters are less likely than salts to be washed off foliage if rain falls soon after their application.

## "ACID EQUIVALENT"

Phenoxy herbicide concentrates are available in various strengths. The amount of active ingredient in the concentrate is indicated on the container label as the number of pounds of "acid equivalent" in each gallon of concentrate.

Usually the strongest concentrates are the most economical to use; they usually cost less per pound of acid equivalent than weaker concentrates. For example, 1 gallon of a 2,4-D concentrate containing 4 pounds of acid equivalent per gallon usually will cost less than 4 gallons of concentrate containing 1 pound of acid equivalent per gallon, and it contains the same amount of active ingredient.

## APPLICATION

### General Principles

If herbicides are applied carefully they can save you money and labor. If they are applied carelessly, they can kill your crops.

Some crops and ornamental plants are extremely sensitive to phenoxy herbicides; they are severely injured or killed by small traces of the herbicides, such as spray drift or vapors.

The most sensitive of the crops and ornamental plants include cotton, grapes, tomatoes, cucumbers, tobacco, mimosa, roses, and dogwood. For more information

about sensitivity of your crops to phenoxy herbicides, ask your county agricultural agent.

When using phenoxy herbicides near sensitive plants, observe all precautions regarding vapors, spray drift, and cleanliness of equipment.

For safe and effective control of weeds—

- Get professional advice before applying herbicides; ask your county agricultural agent, your State extension weed specialist, or other local agricultural authorities for weed-control recommendations.
- Use herbicides wisely: Follow label precautions. Do not apply herbicides for any use for which they are not registered.
- Avoid spraying on windy days.

---

### *Types of Phenoxy Herbicides Commonly Available*

#### **SALTS, such as:**

Amine (triethanolamine, diethanolamine, trimethylamine, diethylamine, and isopropanolamine.

Sodium  
Potassium  
Ammonium

#### **ESTERS**

##### *High-Volatile, such as:*

Methyl  
Ethyl  
Isopropyl  
Butyl  
Amyl

##### *Low-Volatile, such as:*

Butoxyethanol  
Butoxyethoxypropanol  
Ethoxyethoxypropanol  
Isooctyl  
Propylene glycol butyl ether

---



- Do not apply ester formulations when the temperature is above 90°.
- Check output of your sprayer frequently to prevent over application of herbicides.
- Avoid sprayer skips or overlapping swaths.
- Clean spray equipment immediately after use.
- Before using spray equipment for applying insecticides or fungicides to crops, test it for injurious traces of herbicides.

## Methods

### *Cropland*

You can apply herbicides on cropland as preemergence sprays (after the crop is planted but before it or the weeds come up) or as postemergence sprays (after the crop and weeds come up).

Most modern spray equipment is designed for low-volume application—from about 5 to about 20 gallons of spray per acre. With the



BN-13680-X

Cotton is extremely susceptible to phenoxy herbicides. This plant was killed when it was accidentally sprayed with 2,4-D.



proper attachments, low-volume equipment can be used for broadcast spraying, band treatments, or directed spraying.

Apply a broadcast spray if the crop plants are not sensitive to the herbicide.

For broadcast application, the spray rig is equipped with a multiple-nozzle boom or a single boomless nozzle.

Apply a directed spray if the crop plants are somewhat sensitive to the herbicide.

For directed application, the rig is equipped with a boom and drop nozzles, which are adjusted to spray the weeds but no more than the bases of the crop plants.

Airplanes often are used for spraying nonrow crops, such as small grains and rice.

### ***Noncropland***

Use a ground sprayer with boom to apply low-volume broadcast spray for the control of weeds, brush, and trees on grazing land and along irrigation canals.

Airplanes often are used for applying low-volume broadcast sprays to noncropland areas that are too large, too rough, or have too many obstructions for ground equipment.

Apply high-volume directed spray to kill brush and trees along roads, utility lines, and fencerows, and aquatic weeds and brush along irrigation and drainage canals.

Equipment for high-volume spraying usually has a large-capacity spray tank (over 100 gallons per acre of spray may be used) and operates at relatively

high pressure (about 60 to 100 pounds per square inch). The rig usually is equipped with a spray hose and adjustable nozzle. The spray often is applied as a drench that thoroughly wets the leaves and stems of the plants that are to be killed.

Apply sprays of ester formulations in diesel oil or kerosene to the bark at the base of small trees or to cuts in the bark at the base of large trees.

Phenoxy ester formulations with oil as a carrier can be absorbed by the bark at the base of trees with trunk diameters up to about 4

---

### ***Spray Drift***

Wind-carried droplets of phenoxy herbicides may kill susceptible crops near the area that is being treated.

To reduce the danger of damaging crops with spray drift—

- Use nozzles that apply a coarse spray.
  - Use low pressures—no more than 35 pounds per square inch for boom sprayers, 100 pounds for spray guns.
  - Avoid spraying on windy days; do not spray with ground equipment or from airplanes when the wind velocity is sufficient to cause drift to sensitive crops.
  - Spray when wind is blowing away from susceptible crops and toward the area being sprayed.
  - Where special drift hazards exist, use one of the special drift-control agents or formulations in properly designed and adjusted equipment. Get professional advice before using these.
-



RN-13679-X

Spray drift from a nearby application of phenoxy herbicide severely injured this Concord grape vine.

inches. The spray usually is applied with a small hand-operated sprayer and the lower 6 to 12 inches of bark on the trunk is thoroughly wetted with the solution.

The bark of many trees that are over 4 inches in diameter is too thick for the spray to penetrate. To kill these larger trees, it is necessary to ring the base of the tree with ax cuts and spray the ester solution into the cuts. The ax cuts must go through the bark and into the sapwood.

## TESTING OUTPUT OF SPRAYER

Before mixing or applying herbicides on cropland, check the output of your spray equipment. If you apply too little herbicide, it is ineffective. If you apply too much, it may kill your crops.

In the test, the tractor speed and the pump pressure should be the same as they will be when you apply herbicide. If your tractor is not equipped with a speedometer, it is a good idea to make the test on the same type of terrain that you plan to spray and to mark the throttle setting that you use.

To test the output—

- Fill the spray tank with water.
- Spray a strip exactly 220 yards long.
- At the end of 220 yards, stop spraying and measure, in quarts, the amount of water needed to refill the spray tank.

To determine the spray output in gallons per acre, multiply the number of quarts by 16.5 and divide the answer by the width, in feet, of the spray strip.

Example: Your spray rig treats a strip 20 feet wide. At operating





BN-13681-X

The equipment used to apply insecticide to this tobacco plant had been used previously for applying phenoxy herbicide. The tobacco was injured by herbicide traces that remained in the sprayer.

speed and pressure, the rig uses 6 quarts of water in 220 yards:

$$6 \times 16.5 = 99.$$

$99 \div 20 = 4.95$ , or about 5 gallons of spray per acre.

The output of the sprayer is for the area treated. If your sprayer is adjusted to apply spray in bands to row crops, calculate the total width of the spray pattern. To do this, multiply the number of nozzles by the width that each nozzle treats.

If you are using 6 drop nozzles and each treats a 20-inch width, then the total width of the spray

pattern is 10 feet, regardless of the nozzle spacing.

Output of the spray equipment may change because of enlarged nozzle orifices or worn parts in the pump. Check the output periodically to prevent application at the wrong rate.

After you know the output of your sprayer, you can mix the spray accurately. To calculate the total amount of spray needed, multiply the area to be sprayed, in acres, by the output per acre. Add the recommended amount of acid equivalent—in the form of herbicide

concentrate—to enough carrier (water or oil) to equal the total amount of spray needed.

For example: The calculated output is 5 gallons per acre and you plan to spray 10 acres at a recommended rate of 1 pound of acid equivalent per acre. Therefore you will need a total of 50 gallons of spray containing 10 pounds of acid equivalent.

The herbicide concentrate contains 4 pounds of acid equivalent per gallon. Add  $2\frac{1}{2}$  gallons of concentrate (10 pounds total acid equivalent) to  $47\frac{1}{2}$  gallons of water.

## CLEANING SPRAY EQUIPMENT

Clean your spray equipment immediately after using it for applying herbicides.

Some crops can be damaged or killed by traces of phenoxy herbi-

cides that are left in the sprayer after cleaning. Before applying fungicides or insecticides to crops with equipment that has been used for herbicides, test the equipment for herbicide traces.

Fill the tank with water and spray a few of the crop plants. Sensitive plants such as tomato, cotton, and tobacco are good test plants. Wait a day or two after spraying. If the crop plants show no distorted growth after this period, the equipment can be used safely for spraying the crop. If the plants are distorted, then clean the spray equipment again. Retest the equipment for cleanliness before using it on crops.

For greatest safety with sensitive crops, apply fungicides or insecticides with equipment that has not been used for applying herbicides.

You can clean spray equipment quickly with a suspension of acti-



BN-11740-X

The right half of this field was sprayed with 2,4-D before the corn or weeds emerged. The left half of the field was not treated.



## PRECAUTIONS

Phenoxy herbicides are safe when stored, handled, mixed, and used in accordance with label instructions and sound agricultural practices. Most herbicides are low in toxicity. However, some can cause injury to man, many domestic animals, and fish and wildlife if improperly used.

Most herbicides are toxic to many crop plants and ornamentals. Many are volatile and their vapors and spray drift will cause damage to desirable plants. Avoid spraying when windy conditions exist.

Keep herbicides away from children, livestock, and pets. Store herbicides in closed, well-labeled containers in a dry place where they cannot contaminate food, feed, or water.

When handling herbicides wear clean, dry clothing. Launder clothing after each spraying operation before wearing again.

Do not inhale herbicides and avoid contact with spray mist and drift. Avoid repeated or prolonged contact of herbicide with your skin. Avoid spilling it on any part of your body—especially your eyes, nose, and mouth. If you spill it on your body, wash it off with soap and water and remove contaminated clothing.

To protect fish, wildlife, and livestock, do not clean spraying equipment or dump excess spray material near lakes, streams, or ponds.

Empty herbicide containers may be hazardous. Dispose of them in accordance with label instructions and the recommendations of your State Extension weed science specialist or other local agricultural authorities. Do not burn herbicide containers.

vated charcoal in water. Use at least one-third of a tank of water. For each 10 gallons of water add  $\frac{1}{4}$  pound of activated charcoal and  $\frac{1}{8}$  to  $\frac{1}{4}$  pound of laundry detergent. Agitate this mixture vigorously to distribute the charcoal through the water.

Wash the equipment for 2 minutes by swirling the liquid around in the tank so that it reaches all parts of the tank. Pump some of the liquid through the hose and nozzles. Then drain the tank and rinse the equipment with clean water.

## SUSCEPTIBILITY CHART

The chart that follows lists the effects of phenoxy herbicides when

applied as foliage sprays on a number of common weeds. Normal rate of application for 2,4-D, 2,4,5-T,<sup>1</sup> MCPA, or silvex is 1 pound per acre; normal rate of application for 2,4-DB is 2 pounds per acre.

The control ratings for the herbicides are interpreted as follows:

Excellent.—One application at normal rate kills the weed.

Good.—Several applications at normal rate needed to kill the weed.

Fair.—Repeated applications at normal rate or application at higher rates needed to kill the weed.

Poor.—Weed kill is erratic, even at high rates of application.

<sup>1</sup> See limitation on use of 2,4,5-T on page 2.

*Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silver, and 2,4-DB*

Plant name	Type of plant	Control <sup>1</sup>				
		2,4-D	MCPA	2,4,5-T <sup>2</sup>	Silver	2,4-DB
Alder ( <i>Alnus</i> spp.)	Woody	Good	Good	Excellent	Excellent	
Alligatorweed ( <i>Alternanthera philoxeroides</i> )	Perennial	Poor	None	Fair	Fair	Poor.
Alyssum, hoary ( <i>Berteroa incana</i> )	Perennial <sup>3</sup>	Fair	Fair	Excellent		Excellent.
Amaranth:						
Green ( <i>Amaranthus hybridus</i> )	Annual	Excellent	Excellent	do	do	
Palmer ( <i>A. palmeri</i> )	do	do	do	do	Excellent	
See also Pigweed.						
Arrowgrass, seaside ( <i>Triglochin maritima</i> )	Perennial	Fair		Fair		
Arrowhead:						
Annual ( <i>Sagittaria calycina</i> )	Annual	Excellent	Excellent	Excellent	Excellent	Do.
Perennial ( <i>S. longiloba</i> )	Perennial	Fair	Fair	Poor		
Ash ( <i>Fraxinus</i> spp.)	Woody	None	None	do	Poor	None.
Aster:						
Many-flowered ( <i>Aster ericoides</i> )	Perennial	Good				
Western ( <i>A. occidentalis</i> )	do	Poor		Poor		Do.
White heath ( <i>A. pilosus</i> )	do	Fair		Fair	Fair	Do.
Woody ( <i>Xylorrhiza parryi</i> )	do	Poor	None	Poor	Poor	
Baccharis, coyote brush ( <i>Baccharis salicina</i> )	Woody	Excellent				
Baileya, desert ( <i>Baileya multiradiata</i> )	Perennial	Good	Perennial	Good		
Bassia, five-hook ( <i>Bassia hyssopifolia</i> )	Annual	Fair				
Cornflower:						
Batchelor's button ( <i>Centaurea cyanus</i> )	do	Excellent				
Bedstraw:						
Cleavers ( <i>Galium aparine</i> )	do	Poor	None	Poor	Good	Do.
Smooth ( <i>G. mollugo</i> )	do	None	do	do	do	Do.
Beepplant, Rocky Mountain ( <i>Cleome serrulata</i> )	Perennial	Fair				
Beggartick, devils ( <i>Bidens frondosa</i> )	Annual	Excellent	Excellent	Excellent		
Florida betony ( <i>Stachys floridana</i> )	do	Poor		Poor		
Bindweed:	Perennial					
Field ( <i>Convolvulus arvensis</i> )	do	Fair	Fair	Fair	Fair	Fair.
Hedge ( <i>C. sepium</i> )	do	Good	Good	Good		
Biscuitroot ( <i>Lomatium leptocarpum</i> )	do	Fair		do		
Bistort, American ( <i>Polygonum bistortoides</i> )	do	do		Fair		None.
Blackberry ( <i>Rubus</i> spp.)	Woody	None	None	Good	Fair	Do.



Blackeyed susan ( <i>Rudbeckia serotina</i> )	Perennial	Good	do	Excellent	Excellent
Bloodweed ( <i>Ambrosia aptera</i> )	Annual	Fair	do	Excellent	
Blueweed, Texas ( <i>Helianthus ciliaris</i> )	Perennial	Fair			
Bouncingbet ( <i>Saponaria officinalis</i> )	do	Poor	None	Poor	Do.
Boxelder ( <i>Acer negundo</i> )	Woody	Good		Good	
Bracken ( <i>Pteridium aquilinum</i> )	Perennial	None	None	None	Do.
Broomweed, common ( <i>Gutierrezia dracunculoides</i> )	Annual	Good		Good	
Broom, Scotch ( <i>Cytisus scoparius</i> )	Woody	do	do	do	
Buckeye, California ( <i>Aesculus californica</i> )	do	Fair		Poor	None
Buckwheat:					
Tartary ( <i>Fagopyrum tataricum</i> )	Annual	Poor	Excellent	Fair	Good.
Wild ( <i>F. convolvulus</i> )	do	Fair	Fair	Good	
Buffalobur ( <i>Solanum rostratum</i> )	do	None	None	None	
Bulrush ( <i>Scirpus</i> spp.)	Perennial	Fair	Fair	Fair	None.
Burdock, common ( <i>Arctium minus</i> )	Biennial	Excellent	Excellent	Excellent	Excellent.
Bur-head ( <i>Echinodorus cordifolius</i> )	Annual	do	do	do	
Buckbrush ( <i>Symphoricarpos orbiculatus</i> )	Woody	Good		Fair	None
Western ( <i>S. occidentalis</i> )	do	Fair	None	Poor	
Bullnettle ( <i>Onidoscolus stimulosus</i> )	Perennial	Good	Fair	Good	
Burrowweed ( <i>Haplopappus tenuisectus</i> )	do	do		Excellent	
Buttercup:					
Celery leaf ( <i>Ranunculus sceleratus</i> )	Annual	Fair			Excellent.
Corn ( <i>R. arvensis</i> )	do	Good	Excellent	Excellent	Good.
Creeping ( <i>R. repens</i> )	Perennial	do	do	do	Excellent.
Tall ( <i>R. acris</i> )	do	do	do	do	None.
Campion, bladder ( <i>Silene cucubalus</i> )	do	None	None	None	None.
Carpetweed ( <i>Mollugo verticillata</i> )	Annual	Excellent		do	Excellent.
Carrot, wild ( <i>Daucus carota</i> )	Biennial	Fair	Fair	Fair	Fair.
Catchfly, night flowering ( <i>Silene noctiflora</i> )	Annual	None	None	None	None.
Catsear, spotted ( <i>Hypochaeris radicata</i> )	Perennial	Good	Excellent	Excellent	Excellent.
Catnip ( <i>Nepeta cataria</i> )	do	do	do	do	
Cattail:					
Broadleaf ( <i>Typha latifolia</i> )	do	Fair	Poor	Fair	Poor.
Narrowleaf ( <i>T. angustifolia</i> )	do	do	do	do	Do.
Ceanothus ( <i>Ceanothus</i> spp.)	Woody	do	Fair	Good	Fair.
Wedgeleaf ( <i>C. cuneatus</i> )	do	Good	do	Excellent	
Chamise ( <i>Adenostoma fasciculatum</i> )	do	Fair	Poor	Fair	Poor.
Chickweed:					
Common ( <i>Stellaria media</i> )	Annual	do	do	Good	Fair.
Field ( <i>Cerastium arvense</i> )	Perennial	do	do	do	Poor.
Mouseear ( <i>C. vulgatum</i> )	do	do	do	do	Do.

See footnotes at end of table.

*Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silvex, and 2,4-DB—Continued*

Plant name	Type of plant	Control <sup>1</sup>				
		2,4-D	MCPA	2,4,5-T <sup>2</sup>	Silvex	2,4-DB
Chicory ( <i>Cichorium intybus</i> )	Perennial	Good	Good	Good	Good	Fair.
Chokecherry ( <i>Prunus virginiana</i> )	Woody	Poor		Fair	Fair	None.
Cinquefoil:						
Blueleaf ( <i>Potentilla diversifolia</i> )	Perennial	Fair		do		Do.
Common ( <i>P. canadensis</i> )	do	Good	Fair	do	Fair	
Rough ( <i>P. norvegica</i> )	Annual <sup>3</sup>	Excellent				
Sulfur ( <i>P. recta</i> )	Perennial	Good	Fair	Good	Fair	
Cockle:						
Corn ( <i>Agrostemma githago</i> )	Annual <sup>3</sup>	Poor	Poor	None	None	None.
White ( <i>Lycnis alba</i> )	Perennial	do	None	do		Do.
Cocklebur, common ( <i>Xanthium pensylvanicum</i> )	Annual	Excellent	Fair	Excellent		Good.
Cofficeweed ( <i>Daubentonia texana</i> )	Woody	do		do	Good	
Coyote brush ( <i>Baccharis pilularis</i> )	do	Good		Fair		
Coyotillo ( <i>Karwinskia humboldtiana</i> )	Perennial			Excellent	Excellent	
Cranebill, cutleaf ( <i>Geranium dissectum</i> )	Annual <sup>3</sup>		Excellent			
Cress, hoary ( <i>Cardaria draba</i> )	Perennial	Fair	Fair	Fair	Fair	Fair.
Croton:						
Lindheimer ( <i>Croton lindheimeri</i> )	Annual	Excellent	Excellent	Good	Good	Good.
Texas ( <i>C. texensis</i> )	do	do		Excellent	Excellent	Excellent.
Wolly ( <i>C. capitatus</i> )	do	do		do	do	
Burcucumber ( <i>Sicyos angulatus</i> )	do	Fair	Excellent			
Cudweed ( <i>Gnaphalium peregrinum</i> )	Annual	None				
Daisy, oxeye ( <i>Chrysanthemum leucanthemum</i> )	Perennial	Fair	Fair	Good	Fair	None.
Dandelion ( <i>Taraxacum officinale</i> )	do	Excellent	Excellent	Excellent	Excellent	Good.
Deadnettle, red ( <i>Lamium purpureum</i> )	Annual <sup>3</sup>	Poor	Poor	Poor		Poor.
Deathcumas ( <i>Zigadenus gramineus</i> )	Perennial	Fair				
Foothill ( <i>Z. paniculatus</i> )	do	Good				
Deerweed ( <i>Lotus scoparius</i> )	Woody	Excellent		Excellent		
Devil's claw ( <i>Proboscidea louisianica</i> )	Annual	do				



Dock:						
Broadleaf ( <i>Rumex obtusifolius</i> )	Perennial	Good	Fair	Good	Good	Fair.
Curly ( <i>R. crispus</i> )	do	do	do	do	Poor	Fair.
Fiddle ( <i>R. pulcher</i> )	do	Excellent				
Pale ( <i>R. altissimus</i> )	do	Good	Good	Good	Good	Poor.
Veiny ( <i>R. venosus</i> )	do	Fair				
Dodder:						
Largeseed ( <i>Cuscuta indecora</i> )	Annual	Poor	None	None	None	None.
Smallseed alfalfa ( <i>C. pentagona</i> )	do	do	do	do	do	Do.
Duckweed, common ( <i>Lemna minor</i> )	do	do				
Elm ( <i>Ulmus</i> spp.)	Woody	do	None	Fair	Fair	Do.
Eveningprimrose, common ( <i>Oenothera biennis</i> )	Biennial	Excellent		Good	Excellent	
Falseflax, smallseeded ( <i>Camelina microcarpa</i> )	Annual	do				
Fennel, dog ( <i>Eupatorium capillifolium</i> )	do	Good	Fair	Excellent	Excellent	Do.
Fiddleneck, coast ( <i>Amsinckia intermedia</i> )	do	do		Good	do	Do.
Fillaree, redstem ( <i>Erodium cicutarium</i> )	Annual <sup>3</sup>	Good				Poor.
Fireweed ( <i>Epilobium angustifolium</i> )	Perennial	do		Good	Excellent	
Fleabane:						
Annual ( <i>Erigeron annuus</i> )	Annual	Fair	Fair	do	do	Excellent.
Oregon ( <i>E. speciosus</i> )	Perennial	do				
Rough ( <i>E. strigosus</i> )	Annual <sup>3</sup>	Good	Fair	Excellent	Excellent	Good.
Flixweed ( <i>Descurainia sophia</i> )	do	Excellent				
Franseria:						
Bur ( <i>Franseria discolor</i> )	Perennial	Fair				
Woollyleaf ( <i>F. tomentosa</i> )	do	do	Poor	Poor	Poor	Poor.
Galinsoga, hairy ( <i>Galinsoga ciliata</i> )	Annual	Good	Excellent	Excellent	Excellent	
Garlic, wild ( <i>Allium vineale</i> )	Perennial	Fair	Poor	Poor	None	Do.
Geranium, Carolina ( <i>Geranium carolinianum</i> )	Annual <sup>3</sup>	Good	Excellent	Good	Good	Excellent.
Goatsrue ( <i>Galega officinalis</i> )	Perennial	Fair				
Goldenrod ( <i>Solidago</i> spp.)	do	do				
Gooseberry, sierra ( <i>Ribes roezli</i> )	Woody	Excellent		Good		
Goosefoot:						
Jerusalem-oak ( <i>Chenopodium botrys</i> )	Annual	Fair	Excellent	Excellent		Do.
Nettleleaf ( <i>C. murale</i> )	do	Excellent	do	do	Fair	Do.
Oakleaf ( <i>C. glaucum</i> )	do	do	Poor	Fair	Poor	None.
Gooseweed ( <i>Sphenoclea zeylanica</i> )	do	Poor				
Gourd, buffalo ( <i>Cucurbita foetidissima</i> )	Perennial	None				
Goutweed, Bishops ( <i>Aegopodium podagraria</i> )	do	None				
Grapehyacinth ( <i>Muscari botryoides</i> )	do	None				
Greenbrier ( <i>Smilax bona-nox</i> )	Woody	None	Poor	Poor	Poor	
Common ( <i>S. rotundifolia</i> )	do	do	None	do	do	
Gromwell ( <i>Lithospermum officinale</i> )	Perennial	do				

See footnotes at end of table.

*Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silvex, and 2,4-DB—Continued*

Plant name	Type of plant	Control <sup>1</sup>				
		2,4-D	MCPA	2,4,5-T <sup>2</sup>	Silvex	2,4-DB
Groundcherry:						
Clammy ( <i>Physalis heterophylla</i> )	Woody	None		Fair	Fair	None
Purple flower ( <i>P. lobata</i> )	do	do				
Smooth ( <i>P. subglabrata</i> )	do	do	None	Poor	Poor	Do.
Wrights ( <i>P. wrightii</i> )	Annual	Excellent		Excellent	Excellent	
Ground-ivy ( <i>Glechoma hederacea</i> )	Perennial	Fair	Poor	Fair	Good	
Groundsel:						
Arrowleaf ( <i>Senecio triangularis</i> )	do	do		do		Do.
Common ( <i>S. vulgaris</i> )	Annual	Poor	Poor	None	None	Do.
Cressleaf ( <i>S. glabellus</i> )	do	Excellent	Excellent	Excellent	Good	Good.
Riddell ( <i>S. riddellii</i> )	Perennial	do				
Threadleaf ( <i>S. longilobus</i> )	do	Fair				
Gum:						
Sweet ( <i>Liquidambar styraciflua</i> )	Woody	Poor		Good	Fair	
Tupelo or black ( <i>Nyssa sylvatica</i> )	do	None		Fair	do	
Gumweed ( <i>Grindelia squarrosa</i> )	Perennial	Excellent				
Halogeton ( <i>Halogeton glomeratus</i> )	Annual	Fair	Poor	Poor	Poor	None.
Hawksbeard, smooth ( <i>Crepis capillaris</i> )	Annual <sup>3</sup>	Poor	do	None	None	Poor.
Hawkweed:						
Orange ( <i>Hieracium aurantiacum</i> )	Perennial	Fair	do	Poor		
Yellow ( <i>H. pratense</i> )	do	do	do	do		
Hawthorn ( <i>Crataegus</i> spp.)	Woody	None	None	Fair	Poor	None.
Healall ( <i>Prunella vulgaris</i> )	Perennial	Good	do	Poor	do	Do.
Hellebore, false western ( <i>Veratrum californicum</i> )	do	do				
Hemlock, poison ( <i>Conium maculatum</i> )	Biennial	do	Excellent	Fair	Excellent	Excellent.
Hemp ( <i>Cannabis sativa</i> )	Annual	do		Good		Good.
Hempnettle ( <i>Galeopsis tetrahit</i> )	do	Poor	Fair			
Henbit ( <i>Lamium amplexicaule</i> )	do	do	Poor	Fair	Good	Poor.
Hickory ( <i>Carya</i> spp.)	do	do	Fair	do	Fair	None.
Hogpeanut ( <i>Amphicarpa bracteata</i> )	Perennial	Excellent				
Hogpotato ( <i>Hoffmanseggia densiflora</i> )	do	None	None	None	None	Do.
Honey locust ( <i>Gleditsia triacanthos</i> )	Woody	Poor		Fair		
Honeysuckle ( <i>Lonicera japonica</i> )	do	Fair	Excellent	Good	Good	
Horsebrush, littleleaf ( <i>Tetradymia glabrata</i> )	do	Poor		Poor		

Horsenettle, Carolina ( <i>Solanum carolinense</i> )	Perennial	do	do	None	Fair	Poor	Poor.
Horsetail, field ( <i>Equisetum arvense</i> )	do	do	do	Fair	Poor	Poor	Fair.
Horseweed, maretail ( <i>Erigeron canadensis</i> )	Annual	Fair	Fair	do	Good	Good	
Houndstongue ( <i>Cynoglossum officinale</i> )	Biennial	do	do	None	None		
Indian-hemp ( <i>Apocynum cannabinum</i> )	Perennial	do	Poor	do			
Indian-lobacco ( <i>Lobelia inflata</i> )	Annual	Fair	Fair	do			
Iris, Rocky Mountain ( <i>Iris missouriensis</i> )	Perennial	do	do	do	Poor	None	Poor.
Ironweed, Western ( <i>Vernonia baldwini</i> )	do	do	Good	do	Good	None	
Ivy, English ( <i>Hedera helix</i> )	do	do	Good	do	Excellent		
Jerusalem-artichoke ( <i>Helianthus tuberosus</i> )	Annual	do	Excellent	do			
Jewelweed ( <i>Impatiens pallida</i> )	Perennial	do	Fair	do	Fair		
Jimmyweed ( <i>Haplopappus pluriflorus</i> )	Annual	do	Good	do	Good		Excellent.
Jimsonweed ( <i>Datura stramonium</i> )	do	do	Fair	Fair	Excellent	Fair	None.
Jointvetch, Northern ( <i>Aeschynomene virginica</i> )							
Juniper:							
Alligator ( <i>Juniperus deppeana</i> )	Woody	do	None	do	None	None	Do.
One-seed ( <i>J. monosperma</i> )	do	do	do	do	do	do	Do.
Utah ( <i>J. osteosperma</i> )	do	do	Poor	do	Poor	do	Do.
Knapweed:							
Brown ( <i>Centaurea jacea</i> )	Perennial	do	Fair	do			
Diffuse ( <i>C. diffusa</i> )	Biennial	do	Excellent	do	Poor	Poor	Do.
Russian ( <i>C. repens</i> )	Perennial	do	Poor	do	do	do	Do.
Spotted ( <i>C. maculosa</i> )	Biennial	do	Fair	do	Fair	Good	
Squarrose ( <i>C. virgata</i> var. <i>squarrosa</i> )	Perennial	do	do	do			
Knawel ( <i>Scleranthus annuus</i> )	Annual	do	None	do	None		Excellent.
Kochia ( <i>Kochia scoparia</i> )	do	do	Excellent	do	Good	Excellent	
Knotweed:							
Japanese ( <i>Polygonum cuspidatum</i> )	Perennial	do	Poor	do	Poor	do	Poor.
Prostrate ( <i>P. aviculare</i> )	Annual	do	Fair	do	Fair	Fair	
Sakhalin ( <i>P. sachalinense</i> )	Perennial	do	Good	do			
Silversheath ( <i>P. argyrocoleon</i> )	Annual	do	Fair	do			
Kudzu ( <i>Pueraria lobata</i> )	Perennial	do	do	do	Fair	Fair	Excellent.
Lambquarters, common ( <i>Chenopodium album</i> )	Annual	do	Excellent	do	Excellent	Excellent	
Larkspur:							
Little ( <i>Delphinium bicolor</i> )	Perennial	do	None	do	None	None	None.
Menzies ( <i>D. menziesii</i> )	do	do	Fair	do	Fair	None	
Tall ( <i>D. barbeyi</i> )	do	do	None	do	None	Fair	
Duncecap ( <i>D. occidentale</i> )	do	do	do	do	Fair	Fair	Fair.
Lettuce:							
Blue ( <i>Lactuca pulchella</i> )	do	do	Fair	do	do	Fair	
Wild ( <i>L. scariola</i> )	Annual	do	Excellent	do			

See footnotes at end of table.



Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silver, and 2,4-DB—Continued

Plant name	Type of plant	Control <sup>1</sup>			
		2,4-D	MCPA	2,4,5-T <sup>2</sup>	Silverx
Loco, bigbend ( <i>Astragalus earlei</i> )	Annual <sup>3</sup>	Excellent			
Locoweed, white ( <i>Oxytropis lambertii</i> )	Perennial	Fair		Fair	Fair
Locust, black ( <i>Robinia pseudo-acacia</i> )	Woody	do		Good	Good
London-rocket, annual ( <i>Sisymbrium irio</i> )	Annual	Excellent	Excellent	Excellent	Excellent
London-rocket, perennial ( <i>Franseria confertiflora</i> )	Perennial	None	None	None	None
Lupine ( <i>Lupinus rivularis</i> )	Woody	Excellent		Excellent	
Silvery ( <i>L. argenteus</i> )	Perennial	Fair	None	do	Excellent
Tailcup ( <i>L. caudatus</i> )	do	Good			
Madrone ( <i>Arbutus menziesii</i> )	Woody	Fair		Fair	
Mallow:					
Common ( <i>Malva neglecta</i> )	Annual <sup>3</sup>	Poor	None	Poor	Poor
Dwarf ( <i>M. rotundiflora</i> )	Perennial	Fair			
Little ( <i>M. parviflora</i> )	Annual	do	None		
Venice ( <i>Hibiscus trionum</i> )	do	Good	Excellent	Excellent	
Manzanita ( <i>Arctostaphylos</i> spp.)	Woody	do	Poor	Fair	Fair
Maples ( <i>Acer</i> spp.)	do	Poor	None	do	Good
Marshelder ( <i>Iva xanthifolia</i> )	Annual	Excellent	Good	Good	Excellent
Mayweed, dogfennel ( <i>Anthemis cotula</i> )	do	Fair	Poor	Fair	Poor
Medic, Black ( <i>Medicago lupulina</i> )	do	do	Fair	do	Good
Mesquite:					
Honey ( <i>Prosopis juliflora</i> var. <i>glandulosa</i> )	Woody	Poor		do	Fair
Velvet ( <i>P. juliflora</i> var. <i>velutina</i> )	do	None	None	Good	None
Mexican cat ( <i>Chenopodium ambrosioides</i> )	Annual	Excellent	Excellent	Excellent	Excellent
Mexican weed ( <i>Caperonia castaneaefolia</i> )	do	Fair	Fair	Good	None
Milkweed ( <i>Asclepias curassavica</i> )	Perennial	Good		Excellent	Do.
Broadleaf ( <i>A. latifolia</i> )	do	Fair			
Common ( <i>A. syriaca</i> )	do	None	None	Poor	Fair
Showy ( <i>A. speciosa</i> )	do	do	do	do	Do.
Eastern whorled ( <i>A. verticillata</i> )	do	do	do	do	Do.
Mimosa, catclaw ( <i>Mimosa biuncifera</i> )	Woody	do	do	do	Do.
Moneywort ( <i>Lysimachia nummularia</i> )	Perennial	Excellent			Poor.

Morningglory:						
Common ( <i>Ipomoea purpurea</i> )	Annual	do	do	do	Excellent	Excellent.
Ivyleaf ( <i>I. hederacea</i> )	do	do	do	do	do	Do.
Woolly ( <i>I. hirsutula</i> )	do	do	do	do	Excellent	Excellent
Mountain Mahogany ( <i>Cercocarpus montanus</i> )	Woody	do	do	do	do	do
Mudplantain ( <i>Heteranthera limosa</i> )	Annual	do	do	do	do	do
Mugwort ( <i>Artemisia vulgaris</i> )	Perennial	do	do	do	do	do
Mulberry ( <i>Morus</i> spp.)	Woody	do	do	do	do	do
Mulseears ( <i>Wyethia amplexicaulis</i> )	Perennial	do	do	do	do	do
Mullein:						
Common ( <i>Verbascum thapsus</i> )	Biennial	do	do	do	do	do
Moth ( <i>V. blattaria</i> )	Perennial	do	do	do	do	do
Mustard:						
Black ( <i>Brassica nigra</i> )	Annual	do	do	do	do	do
Blue ( <i>Chorispora tenella</i> )	do	do	do	do	do	do
Harescar ( <i>Conringia orientalis</i> )	do	do	do	do	do	do
Hedge ( <i>Sisymbrium officinale</i> )	do	do	do	do	do	do
Indian ( <i>Brassica juncea</i> )	do	do	do	do	do	do
Tumble ( <i>Sisymbrium alissimum</i> )	do	do	do	do	do	do
Wild ( <i>Brassica kaber</i> )	do	do	do	do	do	do
Wormseed ( <i>Erysimum cheiranthoides</i> )	Annual <sup>3</sup>	do	do	do	do	do
Nettle:						
Stinging ( <i>Urtica dioica</i> )	Perennial	do	do	do	do	do
Tall ( <i>U. procera</i> )	Annual	do	do	do	do	do
Niggerhead ( <i>Rudbeckia occidentalis</i> )	Perennial	do	do	do	do	do
Nightshade:						
Black ( <i>Solanum nigrum</i> )	Annual	do	do	do	do	do
Cutleaf ( <i>S. triflorum</i> )	do	do	do	do	do	do
Silverleaf ( <i>S. elaeagnifolium</i> )	Perennial	do	do	do	do	do
Noreal bean ( <i>Sophora secundiflora</i> )	do	do	do	do	do	do
Nutsedge:						
Purple ( <i>Cyperus rotundus</i> )	do	do	do	do	do	do
Yellow ( <i>C. esculentus</i> )	do	do	do	do	do	do
Oak:						
Black ( <i>Quercus velutina</i> )	Woody	do	do	do	do	do
Blackjack ( <i>Q. marilandica</i> )	do	do	do	do	do	do
Blue ( <i>Q. douglasii</i> )	do	do	do	do	do	do
Gambel ( <i>Q. gambelii</i> )	do	do	do	do	do	do
Interior live ( <i>Q. wislizenii</i> )	do	do	do	do	do	do
Post ( <i>Q. stellata</i> )	do	do	do	do	do	do
Scrub ( <i>Q. dumosa</i> )	do	do	do	do	do	do
Shinnery ( <i>Q. havardii</i> )	do	do	do	do	do	do

See footnotes at end of table.



Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silver, and 2,4-DB—Continued

Plant name	Type of plant	Control <sup>1</sup>				
		2,4-D	MCPA	2,4,5-T <sup>2</sup>	Silver	2,4-DB
Oak—Continued						
Turbinella ( <i>Q. turbinella</i> )	Woody	Fair	None	Poor		Poor.
White ( <i>Q. alba</i> )	do	do	Poor	Good	Fair	None.
Onion, wild ( <i>Allium canadense</i> )	Perennial			Poor		Poor.
Orache ( <i>Atriplex hastata</i> )	Annual	Good		Excellent		
Osage-orange ( <i>Maclura pomifera</i> )	Woody	Poor		Good	Fair	
Parsley, desert ( <i>Lomatium grapy</i> )	Perennial	Excellent	Excellent		Excellent	Excellent.
Parsnip, wild ( <i>Pastinaca sativa</i> )	Biennial	do				
Partridgepea ( <i>Cassia fasciculata</i> )	Annual	do	Excellent	Excellent	Excellent	
Passionflower, Maypop ( <i>Passiflora incarnata</i> )	Perennial	Fair				
Peavine ( <i>Astragalus emoryanus</i> )	Annual	Good		Good		
Pellitoryweed ( <i>Parietaria floridana</i> )	do	None	None	Excellent		None.
Pennycress, field ( <i>Thlaspi arvense</i> )	do	Excellent	Excellent	do	Good	Good.
Pennywort, lawn ( <i>Hydrocotyle sibthorpioides</i> )	Perennial	Good		do	Excellent	
Penstemon, Rydberg ( <i>Penstemon rydbergii</i> )	do	Fair		Poor		None.
Pepperweed:						
Field ( <i>Lepidium campestre</i> )	Annual	Excellent	Excellent	Good	Fair	Excellent.
Perennial ( <i>L. latifolium</i> )	Perennial	Fair		Fair		
Virginia ( <i>L. virginicum</i> )	Annual	Excellent	Excellent			
Yellowflower ( <i>L. perfoliatum</i> )	do	do	do	Excellent	Excellent	Do.
Persimmon ( <i>Diospyros virginiana</i> )	Woody	Poor		Poor	Fair	
Texas ( <i>D. texana</i> )	do	Excellent			Excellent	
Pigweed:						
Prostrate ( <i>Amaranthus graecizans</i> )	Annual	do	Excellent	Excellent		Do.
Rough ( <i>A. retroflexus</i> )	do	do	do	do	Excellent	Do.
Tumble ( <i>A. albus</i> )	do	do		do	do	Do.
Pincappleweed ( <i>Matricaria matricarioides</i> )	do	Fair	Poor	None	Poor	None.
Plantain:						
Blackseed ( <i>Plantago rugelii</i> )	Perennial	Excellent	Excellent	Excellent	Good	Excellent.
Broadleaf ( <i>P. major</i> )	do	do	do	do	Excellent	Do.
Buckhorn ( <i>P. lanceolata</i> )	do	do	Good	do	do	Do.
Poison-ivy ( <i>Rhus radicans</i> )	Woody	Fair	Fair	do	do	None.
Poison-oak ( <i>Rhus diversiloba</i> )	do	do	Poor	do	do	Do.

Pokeweed ( <i>Phytolacca americana</i> )	Perennial	do	Fair	Good	Good
Pondweed ( <i>Potamogeton</i> spp.)	do	do	None	Poor	Poor
Ponyfoot ( <i>Dichondra repens</i> )	do	Excellent			
Poorjoe ( <i>Diodia teres</i> )	Annual	Good	Fair	Good	Fair
Poppy, Roemer ( <i>Roemeria refracta</i> )	do	Excellent			
Prickly-ash, Northern ( <i>Xanthoxylum ameri-</i> <i>canum</i> )	Woody	Poor	Fair	Fair	
Pricklypear ( <i>Opuntia</i> spp.)	Perennial			do	
Prickly poppy ( <i>Argemone intermedia</i> )	Annual	Excellent	Fair	Excellent	Good
Purslane, common ( <i>Portulaca oleracea</i> )	do	Fair	do		Fair
Puncturevine ( <i>Tribulus terrestris</i> )	do	Good			
Pusley, Florida ( <i>Richardia scabra</i> )	do	Excellent			
Queensdelight ( <i>Stillingia sylvatica</i> )	Perennial	None			
Rabbitbrush:					
Gray ( <i>Chrysothamnus nauseosus</i> )	Woody	Fair	Poor	Poor	Poor
Yellow ( <i>C. viscidiflorus</i> )	do	do	do	do	do
Radish, wild ( <i>Raphanus raphanistrum</i> )	Annual	Excellent	Excellent	Excellent	Excellent
Ragweed:					
Common ( <i>Ambrosia artemisiifolia</i> )	do	do	do	do	Do.
Giant ( <i>A. trifida</i> )	do	do	do	do	Do.
Western ( <i>A. psilostachya</i> )	Perennial	Good			Do.
Ragwort, tansy ( <i>Senecio jacobaea</i> )	Perennial <sup>3</sup>	do	Fair	Fair	Poor.
Rape, Bird ( <i>Brassica rapa</i> )	Biennial	Excellent	Excellent	Excellent	Excellent.
Raspberry ( <i>Rubus</i> spp.)	Woody	Poor	None	Good	None.
Redbay ( <i>Persea borbonia</i> )	do	do		do	
Redbud ( <i>Cercis occidentalis</i> )	do	do		Poor	
Redvine ( <i>Brunnicchia cirrhosa</i> )	Perennial	None	None	do	Do.
Redstem ( <i>Ammannia coccinea</i> )	Annual	Excellent	Excellent	Excellent	Good.
Rose:					
California ( <i>Rosa californica</i> )	Woody	None		Fair	
Cherokee ( <i>R. laevigata</i> )	do	Fair		do	Excellent
Macartney ( <i>R. bracteata</i> )	do	do	None	Good	Good
Multiflora ( <i>R. multiflora</i> )	do	Poor	do	Fair	Fair
Prairie ( <i>R. pratincola</i> )	do	Fair	Excellent	Excellent	None
Woods ( <i>R. woodsi</i> )	do	None	Fair	Fair	None.
Rubberweed:					
Bitter ( <i>Hymenoxys odorata</i> )	Annual	Excellent			
Colorado ( <i>H. richardsoni</i> )	Perennial	Good		Fair	
Rue, African ( <i>Peganum harmala</i> )	do		do	do	Fair
Sage:					
Creeping ( <i>Salvia sonomensis</i> )	do	Good	Fair	Good	Fair.
Purple ( <i>S. leucophylla</i> )	do	do			do

See footnotes at end of table.



## Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silvex, and 2,4-DB—Continued

Plant name	Type of plant	Control <sup>1</sup>			
		2,4-D	MCPA	2,4,5-T <sup>2</sup>	Silvex
Sage—Continued					
White ( <i>S. apiana</i> )	Perennial	Good			
Sagebrush:					
Big ( <i>Artemisia tridentata</i> )	Woody	do	Poor	Good	Fair
California ( <i>A. californica</i> )	do	Excellent		do	
Sand ( <i>A. filifolia</i> )	do	do	Good	do	Good
Salsify:					
Common ( <i>Tragopogon porrifolius</i> )	Biennial	Good			
Meadow ( <i>T. pratensis</i> )	do	do			
Saltecedar ( <i>Tamarix gallica</i> )	Woody	Poor	None	Fair	Good
Sedge, Umbrella ( <i>Cyperus difformis</i> )	Annual	Fair	Fair	Poor	Poor
Sesbania, coffeebean ( <i>Sesbania exaltata</i> )	do	do	Good	Good	Excellent
Sorrel ( <i>Rumex acetosa</i> )	Perennial	Good	Fair	do	Fair
Heartwing ( <i>R. hastatulus</i> )	do	Excellent			Do.
Red ( <i>R. acetosella</i> )	do	None	None	None	None.
Shepherdspurse ( <i>Capsella bursa-pastoris</i> )	Annual	Good	Good	Excellent	Good.
Sicklepod, coffeeweed ( <i>Cassia tora</i> )	do	Excellent	Excellent		
Skunkcabbage ( <i>Symplocarpus foetidus</i> )	Perennial	Good		Good	Fair
Smartweed:					
Ladysthumb ( <i>Polygonum persicaria</i> )	Annual	do	Fair	do	Do.
Pennsylvania ( <i>P. pensylvanicum</i> )	do	do	do	do	Do.
Swamp ( <i>P. cocineum</i> )	Perennial	Poor			
Snakeroot, white ( <i>Eupatorium rugosum</i> )	do	Fair		Fair	
Snakeweed:					
Broom ( <i>Gutierrezia sarothrae</i> )	do	do	Fair	do	Poor.
Threadleaf ( <i>G. microcephala</i> )	do	Good		Good	
Sneezeweed, bitter ( <i>Helenium tenuifolium</i> )	Annual	Excellent	Excellent	Excellent	Good.
Snow-on-the-mountain ( <i>Euphorbia marginata</i> )	do	Fair		Good	Fair.
Sowthistle:					
Annual ( <i>Sonchus oleraceus</i> )	do	Excellent	Excellent	Excellent	Excellent.
Perennial ( <i>S. arvensis</i> )	Perennial	Fair	Fair	Fair	Fair.
Spiny ( <i>S. asper</i> )	Annual	Excellent	Excellent	Excellent	Excellent.
Spanishneedles ( <i>Bidens bipinnata</i> )	do	do	Excellent	do	Excellent

### Speedwell:

Speedwell:	Perennial	Poor	None	None	Poor	None.
Common ( <i>Veronica officinalis</i> )	Annual	do	do	do	do	Do.
Corn ( <i>V. arvensis</i> )	do	Fair	do	Fair	do	Poor.
Purslane ( <i>V. peregrina</i> )	Perennial	do	Fair	Fair	Poor	Poor.
Spikerush ( <i>Eleocharis palustris</i> )						
Spurge:						
Flowering ( <i>Euphorbia corollata</i> )	do	Poor	do	Good	Fair	None.
Leafy ( <i>E. esula</i> )	do	do	None	Poor	Fair	None.
Spotted ( <i>E. maculata</i> )	Annual	do	Fair	do	Fair	Do.
Spurry, corn ( <i>Spergula arvensis</i> )	Woody	do		Poor	Fair	Poor.
Squaw-berry ( <i>Rhus trilobata</i> )	Annual	Fair		Poor	Fair	None.
Starthistle, yellow ( <i>Centaurea solstitialis</i> )	do	Good				
Sticktight, European ( <i>Lappula echnata</i> )	do	Poor	None			
Strawberry, wild ( <i>Fragaria</i> spp.)	Perennial	do			Fair	Do.
St. Johnswort ( <i>Hypericum perforatum</i> )	do	Fair				
Spotted ( <i>H. punctatum</i> )	Annual	do	Good	Excellent	Excellent	Excellent.
Sumpweed, rough ( <i>Iva ciliata</i> )	do	do	Excellent			Do.
Sunflower ( <i>Helianthus annuus</i> )	do	do			Poor	Poor.
Sweetclover, annual yellow ( <i>Melilotus indica</i> )	do	do	None		Fair	
Tanoak ( <i>Lithocarpus densiflora</i> )	Woody	Poor				
Tansy ( <i>Tanacetum vulgare</i> )	Perennial	Fair				
Tansymustard ( <i>Descurainia pinnata</i> )	Annual	Excellent				
Thistle:						
Blessed ( <i>Cnicus benedictus</i> )	do	do	Fair	Fair	do	Excellent.
Blue ( <i>Echium vulgare</i> )	Biennial	Fair	Excellent	Excellent	Excellent	Excellent.
Bull ( <i>Cirsium vulgare</i> )	do	do	Fair	Fair	do	Fair.
Bristly ( <i>C. horridulum</i> )	Perennial <sup>3</sup>	Fair			Good	Good.
Canada ( <i>C. arvense</i> )	Perennial	do	Fair	Good	Excellent	
Russian ( <i>Salsola kali</i> )	Annual	do	Good			
Tickseed ( <i>Coreopsis tinctoria</i> )	do	do				
Toadflax:						
Blue ( <i>Linaria canadensis</i> )	Perennial	Poor	None	None	None	None.
Yellow ( <i>L. vulgaris</i> )	do	do	Fair	Fair	Fair	Fair.
Toyon ( <i>Heteromeles arbutifolia</i> )	Woody	Good	None	Excellent	Good	Poor.
Tree-of-heaven ( <i>Ailanthus altissima</i> )	do	Fair	None	Fair	Excellent	None.
Trumpet creeper ( <i>Campsis radicans</i> )	do	Poor	do	Good	do	Excellent.
Velvet-leaf ( <i>Abutilon theophrasti</i> )	Annual	Excellent	Good			Excellent.
Vervain:						
Blue ( <i>Verbena hastata</i> )	Perennial	do				
Hoary ( <i>V. stricta</i> )	do	Good				
Prostrate ( <i>V. bracteata</i> )	do	do	Excellent			
Roadside ( <i>V. bonariensis</i> )	do	Good				

See footnotes at end of table.



*Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silver, and 2,4-DB—Continued*

Plant name	Type of plant	Control <sup>1</sup>			
		2,4-D	MCPA	2,4,5-T <sup>2</sup>	Silver
Vetch:					
Narrowleaf ( <i>Vicia angustifolia</i> )	Annual	Excellent	Fair	Excellent	
Milk ( <i>Astragalus</i> spp.)	Perennial	Good	do	Good	Excellent
Two grooved ( <i>A. bisulcatus</i> )	do	Excellent			
Wild ( <i>Vicia</i> spp.)	Annual	do	Excellent	Excellent	Excellent
Violet ( <i>Viola</i> spp.)	Perennial	Poor	None	Excellent	Good
Walnut, black ( <i>Juglans nigra</i> )	Woody	Excellent		do	
Waterhemlock, spotted ( <i>Cicuta maculata</i> )	Perennial	Good		do	
Water-hyacinth ( <i>Eichhornia crassipes</i> )	do	do			Excellent
Waterplantain ( <i>Alisma triviale</i> )	do	Excellent	Excellent		do
Waterweed, Canada ( <i>Elodea canadensis</i> )	do	Fair			do
Willow ( <i>Salix</i> spp.)	Woody	Good	Good	Good	Good
Witchweed ( <i>Striga asiatica</i> )	Annual	Excellent	Excellent	Excellent	Excellent
Woodsorrel, yellow ( <i>Oxalis stricta</i> )	Perennial	Poor	None		do
Wormwood, annual ( <i>Artemisia annua</i> )	Annual	Good	Fair	Good	
Yankeeeweed ( <i>Eupatorium compositifolium</i> )	Perennial	Fair		Fair	
Yarrow:					
Common ( <i>Achillea millefolium</i> )	do	Poor	Poor	Poor	Poor
Western ( <i>A. lanulosa</i> )	do	Fair		Fair	
Yellow-rocket ( <i>Barbarea vulgaris</i> )	Perennial <sup>3</sup>	Good	Good	Good	Fair
Yerba-santa ( <i>Eriodictyon californicum</i> )	Woody	Excellent	do	do	do
Yucca; soapweed ( <i>Yucca glauca</i> )	Perennial	None		Poor	do

<sup>1</sup> For explanation of control ratings, see "Susceptibility Chart," page 11.

<sup>2</sup> See limitation on use of 2,4,5-T, page 2.

<sup>3</sup> Sometimes biennial.